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ABSTRACT

Student attitudes toward the Internet were investigated in a study designed to develop an instrument that would provide a quantitative measure of the attitudes undergraduates have toward educational uses of the Internet while studying some behavioral correlates of student attitudes. The responses of 395 undergraduates to some form of the scale were used to construct the measure. Statements soliciting attitudes toward educational use of the Internet were written in two formats: the Thurstone equal appearing interval scale and the Likert summated rating scale. These pilot scales were administered with a social desirability response scale to ensure that students did not respond to scale items in a socially desirable manner. The final form, administered to 188 students, was an 18-item Likert-format "Attitude toward Educational Uses of the Internet" (ATEUI) scale that yielded a high internal consistency. Several behavioral correlates lent some credence to the scale's construct validity. Favorable attitudes were associated with: (1) keeping track of valuable educational Internet sites; (2) sharing information found on the Internet with friends; (3) choosing classes that use the Internet; (4) greater frequency of Internet use, both in general and for educational purposes; (5) greater number of reasons for using the Internet in education; and (6) greater number of Internet features used. Also, there were no differences between men and women or in class standing in ATEUI responses. Future research that considers using the ATEUI should continue to obtain new behavioral correlates of the domain. (Contains 2 tables and 14 references.) (Author/SLD)

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Measuring Students' Attitude Toward Educational Use of the Internet

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Abstract

Student use of the Internet, particularly for educational purposes, has become commonplace since most schools and universities are implementing the technology. Because of the Internet's novelty, few studies have been conducted to investigate students' attitudes toward the Internet, especially its educational uses. The purposes of the this study were: (a) to develop an instrument that would provide a quantitative measure of the attitudes undergraduate students have toward educational use of the Internet and (b) to study some selected behavioral correlates of those attitudes. Statements soliciting attitudes toward educational use of the Internet were written in two formats: the Thurstone equal appearing interval scale, and the Likert summated rating scale. These pilot scales were also administered along with a social desirability response scale to ensure that students did not respond to scale items in a socially desirable manner. The final form was an 18-item Likert-format "Attitude Toward Educational Uses of the Internet" (ATEUI) scale and yielded a high internal consistency. Several behavioral correlates were found to lend some credence to the scale's construct validity. For instance, favorable attitudes were associated with: (a) keeping track of valuable educational Internet sites, (b) sharing information found on the Internet with friends, (c) choosing classes that use the Internet, (d) greater frequency of Internet use, both in general and for educational purposes, (e) greater number of reasons for using the Internet for education, and (f) greater number of Internet features used. Also, there were no differences between men and women or in class standing in ATEUI. Future research that considers using the ATEUI should continue to obtain new behavioral correlates of the domain.

Measuring Students' Attitude Toward Educational Use of the Internet

Although the Internet can be described as a popular, common tool for accessing and disseminating information, conducting research, and sharing ideas about a particular topic, research does not fully describe the educational uses of the Internet or the affective component of using the Internet for education. Previous research describes uses of the Internet for information seeking (Wei He & Jacobson, 1996) and the communication patterns of Internet users (Williams & Meredith, 1996), but implications of this research compared with the prevalence of current Internet use suggests disparity between prior findings and current use of the Internet. The Internet has evolved since the 1970s from a medium data transfer between computers among a particular industry to a mainstream mega-system, used by people of various ages, economic levels, and careers, and across gender. The increased use of the many capabilities of the Internet is also expected to be related to the type of affect an Internet user reports. This present investigation reports the development of a measure of college students' attitudes toward educational use of the Internet and a study of selected behavioral correlates of those attitudes.

Literature Review

Despite the common availability and power of the Internet on college campuses, educational programs of study frequently do not recognize the possibilities of computer systems as a pedagogical component of college classrooms (Williams & Meredith, 1996). Faculty have been encouraged and admonished to use the Internet to its fullest potential both in their own professional development (Sewall, 1996) and instruction of future instructors (Windschitl, 1998; Thomas, Clift, & Sugimoto, 1996). Given the mounting

pressure technology has placed on the educational community, general computing skills and attitudes of students entering introductory computing courses have changed over the past decade (Price & Winiecki, 1995).

Researchers in the "computer age" of the late 1980s assessed how people reacted to computer use and computer-related mechanisms and found that female participants exhibited more negative reactions to computer usage than male participants (Popovich, Hyde, Zazrajsek, and Blumer, 1987). Furthermore, there was a significant negative relationship between the hours of computer use of participants and the degree of negativity of the reaction, suggesting that those participants who spent more time using computers showed less negative reaction to computers and computer-related technology (Popovich, Hyde, Zazrajsek, and Blumer, 1987). Likewise, similar research found that males used computers more than females for programming and game playing, but not more for other computer applications (Lockheed, 1985). At the same time, other researchers provided developmental data to examine computers and video games as male activities and to examine the differences between males and females in attitudes toward computing among an achievement-oriented group of college freshmen (Wilder, Mackie, & Cooper, 1985). These researchers also found males and females perceived computers to be more male-appropriate, and they found a sex difference in attitude toward the computer (Wilder, Mackie, & Cooper, 1985).

However, attitudes toward computers for both males and females as well as computer-related behaviors are expected to have changed drastically over the last decade. In one study, 91% of college students entering a typical introductory college computing course believed that they will need to use computers on a regular basis in the future (Price

& Winiecki, 1995). Consistent with earlier research, students with less experience using computers showed more anxiety towards computer use (Price & Winiecki, 1995).

As the use of computers increases, educators need to enhance computer literacy and rely on computers to access current information and to share research conducted on computer and via the Internet (Sewall, 1996). Likewise, as the Internet becomes an integral component of higher education, researchers nust explore the uses of the Internet for educators' social support and for exchange of professional information (Thomas, Clift, & Sugimoto, 1996). Situations, task demands, prior experiences, and current social settings encourage Internet use. However, both students and instructors are faced with situations where the Internet provides opportunity for information inconsistent with their demands (Fulk, Steinfield, Schmitz, & Power, 1987).

Research on communication patterns of novice Internet users taking an Internet-based course found a pattern that included initial contact, chatting, technology-related questions, and questions related to course content (Williams & Meredith, 1996). Previous research includes participants describing several advantages and disadvantages of computer-based class communication as an instructional tool. Some of the advantages included access at any time, encouraging nonjudgmental communication, providing limitless resources, and encouraging group problem solving (Williams & Meredith, 1996). Some of the disadvantages included lack of direct financial support, initial frustration with technology, and frustrations with "getting lost" in the computer.

Specific to the Internet, a recent study by Wei He and Jacobson (1996) explored the effects of gender, college status, and prior Internet experience on the use of Internet resources. They found that the majority of Internet users shared the following

characteristics: (1) they were male undergraduates affiliated with the social sciences and are novice users who have less than six months experience; (2) respondents felt strongly that the Internet was useful, (3) users have high expectations of searching capabilities, while they felt neutral or disappointed with browsing. Wei He and Jacobson's study (1996) provides a description of the types of behaviors Internet users choose to conduct research. Internet users at this time were seeking information, and not just using the Internet for entertainment. As the use of the Internet continues to increase, educators have developed classroom activities that incorporate such use. However, research does not yet substantiate the effectiveness of using the Internet for changing pedagogical practices, nor does it yet support the usefulness of the Internet as a tool for supporting research (Windschitl, 1998).

While previous research provides a background for understanding the evolution of Internet use and the inclusion of Internet-related classroom instruction and exercises, student attitudes toward the Internet for education have not been researched. Also, student attitudes are expected to vary with regard to experience and Internet-related behaviors, but such behavioral correlates have not yet been described as a result of systematic research. The purpose of this study was to: (a) develop an instrument that would measure student attitudes toward educational uses of the Internet, and (b) study some selected behavioral correlates of those attitudes.

Method

The development of this instrument is described, and results from implementation of the instrument at various stages are reported in this section. This research included five steps in the procedure of developing the instrument: (1) generating an initial pool of

statements, (2) determining the scalability of statements, (3) operationalizing statements, (4) assessing initial student reactions based on a five-point scale, and (5) evaluating student attitudes about the affective component of using the Internet for educational purposes. During the processes of operationalizing statements and assessing initial student reactions, items were also assessed for correlations with social desirability in order to conclude that participants were not merely providing what they perceived to be the most desirable responses. Several behavioral correlates of the affective responses are also described.

Participants

Students enrolled in various communication and health promotion classes in a large southeastern university were used to construct the scale by completing some form of the questionnaire (N = 395). Instructors who agreed to offer class time informed students that participation was voluntary and unrelated to class material or class-related research. Participants were provided a web site where results of the project would be available at a later date. No student participated in more than one form of the questionnaire, as each step utilized a new sample. The final form was administered to 188 participants, including 67 males and 113 females; 8 did not respond to the gender item. Grade point averages for participants completing the final form ranged from 1.67 to 4.00 on a four-point scale, with a mean of 3.08 and a standard deviation of .49. The breakdown for the final form by year in school included 42 freshmen, 40 sophomores, 39 juniors, and 60 seniors; 7 did not respond to the year in school item.

Generating an initial pool of statements

An initial pool of 60 attitude statements was created based on personal experience of the authors and ideas from existing literature. Twenty positive, twenty neutral, and twenty negative statements were drafted. This initial pool of statements was edited for item phrasing and development (Edwards, 1957) as well as duplication and redundancy. The editing process yielded a final set of 33 statements.

Determining the Scalability of Statements

To establish the scalability of the domain, a questionnaire was administered to a sample of students (N = 70), who responded by providing their perceptions of the degree of favorableness of the statement toward use of the Internet for education. Responses were provided on a nine-point scale, with a range from "extremely unfavorable" to "neutral" to "extremely favorable." The median score for each item was taken from this initial survey, and standard deviation of each item was used as a measure of agreement among judges. Median scores were used in the process of operationalizing items and refining the instrument. Median scores ranged from 3 to 7 on the nine-point scale. Items with a median score of 3 or 4 were judged to be negative; items with a median score of 5 were judged to be neutral; items with a median score of 6 to 7 were judged to be positive. Eighteen items were retained for the purpose of operationalizing the items, including six negative items, six neutral items, and six positive items.

Operationalizing Statements

Consistent with the Thurstone equal appearing interval method (Thurstone & Clave, 1929), the eighteen items were then operationalized by a new sample of students (N = 69) indicating either their agreement or disagreement for each item. Number of

people who chose "agree" for the item was multiplied by the median value for the item (from the previous form of the questionnaire) to determine the range of items included. The range for individual items was from 12 to 413. Here, the 18-item scale assessing the affective domain using the Attitude Toward Educational Uses of the Internet (ATEUI) was determined to be scalable. In addition, the effect of social desirability was assessed in this questionnaire using a total score from a five-item measure (Hays, Hayashi, & Stewart, 1989). Correlations between individual items and a total social desirability score ranged from r = -.01 to .15. Furthermore, internal consistency was assessed using Cronbach's Alpha reliability analysis (Cronbach, 1951), which yielded a coefficient of .60 for social desirability and .87 for the ATEUI. Items were again evaluated by the researchers for item phrasing and development, resulting in slight changes of wording of a few items. The number of items for the next step in development of the instrument remained at 18 for attitude toward educational uses of the Internet. An additional 5 items assessing social desirability were added at the end of this step, in order to measure social desirability of each item as initial reactions were measured.

Assessing Initial Student Reactions based on a Five-Point Scale

Because of the ease of administration, a Likert format was selected for administration of the operational form of the ATEUI using a five-point response scale ranging from "strongly disagree" to "strongly agree." Sixty-eight students completed the Likert form of the questionnaire. The correlation between an individual item and total social desirability score ranged from r = .40 to r = .29, suggesting that social desirability did not affect responses to affective judgments. Reliability analysis, again using

Cronbach's Alpha, yielded a coefficient of .55 for social desirability and .89 for the ATEUI.

Evaluating student attitudes and behaviors: Final form

Internal consistency of the final form, as measured by Cronbach's Alpha, was found to be .91. Items included in the final form of the ATEUI instrument are included in Table 1, along with the means, standard deviations, and item-total correlations. Means ranged from 2.58 to 4.08 on a five-point scale. Standard deviations ranged from .71 to 1.20. Corrected item-total correlations ranged from .36 to .74.

Behavioral correlates were initially developed by researchers generating 40 items based on personal experience, knowledge of uses of the Internet, and ideas from existing literature. Editing for duplication, redundancy, item phrasing, and development yielded 11 behaviors included with the ATEUI in the final form of the questionnaire. Frequencies for each of the behavioral correlate questionnaire items, along with the mean and standard deviation (on a five-point scale) are reported in Table 1.

Results

Absolute values of item-total correlations ranged from .01 for learning to use the Internet from a library instruction session to .57 for choosing to take a class that required Internet use, and for browsing the Internet more often. Frequencies, descriptive statistics, and results of one-way ANOVA are reported in Table 2. Eight of the eleven behavioral correlate items yielded statistically significant results (Table 2). These behavioral correlates showed statistically significant relationships with the ATEUI. Participants who keep track of valuable educational sites on the Internet showed significantly stronger attitudes toward educational use of the Internet than those who do not keep track of

valuable educational sites, $F_{(1,182)} = 20.845$, $p < .01$. Participants who discuss / share class-related information found on the Internet showed significantly more favorable attitudes toward educational uses of the Internet than those who do not share such information $F_{(1,181)} = 38.84$, $p < .01$. Given a choice, those who would take a class that required Internet use showed significantly more favorable attitudes toward educational use of the Internet $F_{(1,177)} = 89.21$, $p < .01$. Those who browse the Internet more often also showed a significantly more favorable attitude toward educational use of the Internet $F_{(4,177)} = 25.56$, $p < .01$. Likewise, those who search the Internet more often with a specific educational need also showed a more favorable attitude toward educational use of the Internet $F_{(4,176)} = 23.29$, $p < .01$. Internet users who were self taught showed significantly more favorable attitudes than those who learned from another method $F_{(1,180)} = 21.79$, $p < .01$.

The purposes for which participants used the Internet and its features were analyzed next. Those who reported using the Internet to consult with instructor $F_{(1,177)} = 10.93$, $p < .01$, to consult with classmates $F_{(1,177)} = 9.75$, $p < .01$, to complete homework assignments $F_{(1,177)} = 11.45$, $p < .01$, to complete term paper research $F_{(1,177)} = 14.55$, $p < .01$, or to retrieve class lessons or lecture notes $F_{(1,177)} = 7,25$, $p < .01$ showed significantly more favorable toward educational use of the Internet. With regard to features of the Internet, those who use electronic mail $F_{(1,176)} = 6.41$, $p < .01$, the World Wide Web $F_{(1,176)} = 42.62$, $p < .01$, newsgroups $F_{(1,176)} = 15.03$, $p < .01$, FTP $F_{(1,176)} = 5.56$, $p < .05$, LISTSERVs $F_{(1,176)} = 5.58$, p

< .05, Telnet $F_{(1,176)} = 8.28$, $p < .01$, Forwarding $F_{(1,176)} = 15.27$, $p < .01$, and Downloading $F_{(1,176)} = 11.93$, $p < .01$ showed significantly more favorable attitudes toward educational use of the Internet.

Discussion

The purpose of the present study was to (a) develop an instrument that would provide a quantitative measure of the attitudes undergraduate students have toward educational uses of the Internet and to (b) study some selected behavioral correlates of those attitudes. Overall, the final form of the ATEUI was found to be a reliable measure of the attitude. Also, based on scale values of the ATEUI, it appears that students' attitudes toward educational use of the Internet is a homogenous construct, so factor analysis of the scale was not undertaken. An examination of behavioral correlates provides preliminary evidence for construct validity.

Behavioral Correlates

Several behaviors were found to be associated with favorable attitudes of educational use of the Internet. Students who keep track of valuable educational sites on the Internet possess a more favorable attitude about its educational use. It is speculated that educational sites may appeal to students who enjoy the capabilities of the Internet, so they may be more inclined to keep track of them. In addition, students who have a more favorable attitude about Internet use for education share related information on the Internet with friends. The attitude for its use may actually stimulate social use of the technology. Also, students with a more favorable attitude said they would, if given a choice, take a course that required Internet use. Future research may expand these

findings and explore whether more favorable attitudes motivates one to "search out" the courses in which instructors have chosen to implement Internet technology.

Another correlate of the attitude measure was frequency of general Internet use, and frequency of use for educational purposes; students with favorable attitudes may be using the Internet in general and for educational reasons more frequently. At this time, it is uncertain whether students with favorable attitudes choose to use the Internet more often, or more frequent use leads to the development of more favorable attitudes. To begin to answer this, one could consider the ways in which students initially learn to use the Internet. The present study did find that using more instructional methods to learn the Internet was associated with more favorable attitudes, with self-taught, followed by friends / colleagues and class instruction being the most popular instructional method used by students. This is consistent with Wei He and Jacobson (1996) who found self-taught or learning from friends to be the most common methods of Internet instruction. Interestingly, attitudes were more favorable for students who said they taught themselves how to use the Internet than those who did not. So, perhaps using a number of instructional methods along with learning the Internet on one's own could "set the stage" for a more favorable attitude in the future. Future research may wish to consider this.

Reasons for which students use the Internet for education are diverse. Favorable attitude was associated with a greater number of reasons for using it. This may suggest that those who possess a favorable attitude for its educational use may be using the Internet to satisfy the many tasks of today's education, such as consulting with instructor, and research, for example. It would be interesting to argue through future research that favorable attitudes of Internet use for education could provide students with an advantage

they need to stay abreast the increasing knowledge-base, since use of the Internet continues to increase in the business world, in academics, and in a variety of social networks. Also, students use of the Internet for term paper research was found to be the most common type of use, followed by retrieving class lessons / lecture notes and consulting with the instructor. Attitudes are more positive when students said they use the Internet for any one specific purpose.

The many features of the Internet appear to be utilized by college students, with more features being used by students with more favorable attitudes. As one would expect, those students who think highly of the Internet would exhaust its capabilities; they may be learning to like to more by using more of its various features. Specifically, electronic mail and World Wide Web were found to be the most used features of the Internet. Again, this supports a similar finding documented by Wei He and Jacobson (1996). As with the many reasons for which students use the Internet, attitudes are more favorable when they report using any given feature than when they do not.

There are some behaviors that did not relate to the attitude domain. It was found that slightly more than half of the students in the sample reported that they owned a computer. However, there was no difference in attitude toward using the Internet for education between those who own a computer and those who do not. Nor was there a difference in attitude between students who are connected to the Internet and those who are not. This suggests that students who have computers and / or are connected to the Internet may have other used for its capability other than potential educational reasons, so attitude may not influence or be dictated by sheer ownership of the technology. In addition, 62% of student participants said they would still go to class if they could get all

lecture and course information from the Internet, yet their attitude toward using the Internet for education was similar to those who said they would skip class. This decision may be one of convenience and not attitude.

No gender differences were found for any of the behavioral correlate items or for general attitudes toward educational use of the Internet. Year in school did not show significant differences either. These two demographic variables seem to be important in terms of description, but not in terms of statistical significance. The lack of significance for gender suggests progression from the expectations of male use of computers in the 80s, as well as the prevalence of computer use among both male and female college students.

Frequencies of positive responses also suggest the sources of attitudes about using the Internet for education, as well as frequencies of occurrence of behaviors used for correlates in this study. While keeping track of valuable educational sites suggests positive attitude toward educational use of the Internet, 78% of participants report that they do not keep track of such sites. Likewise, while discussing and sharing class-related information found on the Internet suggests positive attitude toward educational use of the Internet, 58% of participants report that they do not share such information. These two items did both show a positive correlation with attitude, and they were both statistically significant. Future research should address these behaviors as appropriate correlates and the relevance of engaging in these behaviors.

As an end note, class year produced no differences in attitude, not was the attitude related to self-reported grade point average. One might expect that attitude becomes more (or less) favorable as one progresses from the freshman to the senior year of college.

Future research may want to examine the developmental and educational point where a student acquires a specific attitude.

The ATEUI scale has been found to be reliable using an index of internal consistency. There is even some evidence for construct validity based on selected behavioral correlates of the attitude. Since this was the first to inquire about college students' attitude about using the Internet for education, especially from a psychometric perspective, future research using the ATEUI should gather more information concerning other potential correlates of the attitude.

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Table 1

Means, standard deviations, and item-total correlations for the final form of the Attitude Toward Educational Use of the Internet (ATEUI) based on Likert format (N = 185).

Item	Mean	SD	r_t[a]
1. Knowledge of the Internet is essential for surviving college	3.25	1.20	.603
2. The Internet is as important as other research tools	3.86	.97	.655
3. I prefer to use the Internet to do research	3.29	1.17	.760
4. I feel that the Internet contains mostly useless information (R)[b]	3.89	.72	.416
5. The Internet is too difficult to use for school	4.08	.71	.544
6. I feel the Internet is easier to use than the library	3.34	1.08	.621
7. Generally, I feel the Internet is as informative as the teacher	2.58	.98	.552
8. I hate using the Internet for important educational projects (R)	3.65	.97	.730
9. I enjoy getting information from books and the Internet equally	3.16	1.00	.333
10. I feel overwhelmed when I try to use the Internet for my classes (R)	3.45	1.03	.533
11. The Internet does not particularly excite me (R)	3.30	1.08	.718
12. Using the Internet makes learning fun	3.45	.85	.692
13. I feel the Internet is an integral part of the educational process	3.28	1.00	.737
14. I am indifferent about using the Internet for education (R)	3.21	1.03	.667
15. I wish I did not have to use the Internet for educational purposes (R)	3.57	.95	.777
16. Using the Internet is as convenient as using the library	3.53	1.08	.700
17. Access to the Internet for educational purposes is not important to me (R)	3.61	.96	.731
18. Browsing the Internet confuses me (R)	3.40	1.07	.499

Note. Response is on a 5-point scale (5 = strongly agree, 1 = strongly disagree)

[a] r_t = item total correlation

[b] (R) = reversed scored item

Table 2

Results of the one way ANOVA of ATEUI scores by the behavioral correlates questionnaire items

Item	Question content	Response Option	Freq(%)	Mean (SD)	*F*	df	*p*
1.	Do you own a personal computer?	Yes	101(53.7)	62.46(11.3)	.67	1,181	.41
		No	85(45.2)	61.02(11.3)			
2.	Are you connected to the Internet?	Yes	91(48.4)	63.36(10.9)	2.95	1,182	.09
		No	96(51.1)	60.48(11.5)			
3.	Do you keep track of valuable educational sites?	Yes	40(21.3)	68.58(7.9)	20.85	1,182	.00
		No	147(78.2)	59.94(11.4)			
4.	If you could get all lecture and course information from the Internet, would you go to class?	Yes	116(61.7)	61.92(11.7)	.19	1,179	.67
		No	68(36.2)	61.2 (10.7)			
5.	Do you and your friends discuss /share class related information found on the Internet?	Yes	77(41.0)	67.50(8.7)	38.84	1,181	.00
		No	109(58.0)	57.96(11.3)			
6.	Given a choice, would you take a course that required Internet use?	Yes	108(57.4)	67.14(8.6)	89.21	1,177	.00
		No	74(39.4)	53.82(10.2)			
7.	On average, how often do you browse the Internet?	Never	14(7.4)	44.82(10.1)	25.56	4,177	.00
		Once a quarter	26(13.8)	53.82(9.4)			
		Once a month	38(20.2)	60.66(9.2)			
		Once a week	74(39.4)	65.70(8.7)			
		Daily	33(17.6)	68.76(8.7)			
8.	On average, how often do you search the Internet with a specific educational need?	Never	28(14.9)	48.24(9.3)	23.29	4,177	.00
		Once a quarter	47(25.0)	58.86(9.7)			
		Once a month	64(34.0)	65.34(9.6)			
		Once a week	40(21.3)	67.86(8.0)			
		Daily	5(2.7)	66.78(7.5)			
9.	How did you initially learn to use the Internet?						
		Class - Yes	67(35.6)	63.72(11.9)	3.15	1,180	.08
		No	118(62.8)	60.66(10.9)			
		Journal/Book - Yes	4(2.1)	68.58(6.4)	1.47	1,180	.23
		No	181(96.3)	61.56(11.3)			
		Conference/Presentation - Yes	4(2.1)	66.96(5.8)	.89	1,180	.35
		No	181(96.3)	61.56(11.4)			
		Friends/colleagues - Yes	121(64.4)	62.82(11.5)	3.10	1,180	.08
		No	64(34.0)	59.76(10.9)			

Library/Instruction -	Yes	11(5.9)	65.88(9.5)	1.37	1,180	.24
	No	174(92.6)	61.56(11.4)			
Self-taught -	Yes	128(68.1)	64.26(10.2)	21.79	1,180	.00
	No	57(30.0)	56.16(11.9)			
Other -	Yes	10(5.3)	66.96(9.5)	2.31	1,180	.13
	No	175(93.1)	61.38(11.4)			
10. Which of the following educational purposes do you use the Internet?						
Consult with instructor -	Yes	89(47.3)	64.44(10.3)	10.93	1,177	.001
	No	93(49.5)	59.04(11.8)			
Consult with classmates -	Yes	53(27.7)	65.88(10.0)	9.76	1,177	.002
	No	130(69.1)	60.12(11.5)			
Homework Assignments -	Yes	73(38.8)	65.16(9.9)	11.45	1,177	.001
	No	109(58.0)	59.40(11.8)			
Term paper research -	Yes	125(66.5)	63.90(10.2)	14.55	1,177	.000
	No	57(30.3)	57.05(12.6)			
Retrieving class lessons/lecture notes -	Yes	91(48.4)	63.9(11.2)	7.25	1,177	.008
	No	91(48.4)	57.06(11.1)			
Peer review -	Yes	18(9.6)	62.82(10.8)	.174	1,177	.677
	No	164(87.2)	61.56(11.5)			
Other -	Yes	24(12.8)	64.98(9.8)	2.39	1,177	.124
	No	158(84.0)	61.20(11.5)			
11. What of the following features for using the Internet apply to you?						
Electronic mail -	Yes	162(86.2)	62.82(11.1)	6.41	1,176	.012
	No	19(10.1)	55.44(12.5)			
World Wide Web -	Yes	163(86.7)	63.36(10.1)	42.62	1,176	.000
	No	18(9.6)	46.80(11.9)			
Newsgroups -	Yes	31(16.5)	68.58(8.6)	15.03	1,176	.000
	No	150(79.8)	60.30(11.4)			
FTP -	Yes	11(5.9)	69.48(8.9)	5.56	1,176	.019
	No	170(90.4)	61.20(11.3)			

	LISTSERVs - Yes	23(13.3)	66.78(7.8)	5.59	1,176	.019
	No	156(83.0)	60.84(11.7)			
	Chat rooms - Yes	47(25.0)	64.26(9.0)	3.09	1,176	.080
	No	134(71.3)	60.84(12.0)			
	Telnet - Yes	39(20.7)	66.42(10.6)	8.29	1,176	.004
	No	142(75.5)	60.48(11.3)			
	Forwarding - Yes	48(25.5)	67.14(8.9)	15.27	1,176	.000
	No	133(70.7)	59.76(11.6)			
	Downloading - Yes	57(30.3)	66.06(8.5)	11.93	1,176	.001
	No	124(66.0)	59.76(12.0)			
	Uploading - Yes	21(11.2)	67.32(8.0)	5.39	1,176	.021
	No	160(85.1)	61.02(11.6)			
	Other - Yes	10(5.3)	67.14(8.6)	2.49	1,176	.117
	No	171(91.0)	61.38(11.5)			
Gender	Man	67(35.6)	60.66(10.9)	.607	1,175	.437
	Woman	113(60.1)	62.28(11.7)			
Year in School	Freshman	42(22.3)	61.38(11.2)	1.59	3,174	.195
	Sophomore	40(21.3)	62.82(11.3)			
	Junior	39(20.7)	58.50(10.8)			
	Senior	60(31.9)	63.36(11.9)			